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APPLICATION NUMBER: ***60/539,816***
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. EV 394116975 US

INVENTOR(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
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☐ Additional inventors are being named on the_____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max)

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ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification *Number of Pages* 13
☐ CD(s), Number
☒ Drawing(s) *Number of Sheets* 5
☒ Other (specify) 9 pages of backgound material
☐ Application Data Sheet. See 37 CFR 1.76

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☒ Applicant claims small entity status. See 37 CFR 1.27.
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Respectfully submitted,

SIGNATURE _____ Date 01.28.2004

TYPED or PRINTED NAME Laurence P. Colton REGISTRATION NO. (if appropriate) 33,371

TELEPHONE 770.522.9762 Docket Number: 20412.002US

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☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) **$80.00**

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Application Number	
Filing Date	
First Named Inventor	DANIELS
Examiner Name	
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Attorney Docket No.	20412.002US

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	0.00
1002	340	2002	170	Design filing fee	0.00
1003	530	2003	265	Plant filing fee	0.00
1004	770	2004	385	Reissue filing	0.00
1005	160	2005	80	Provisional filing fee	80.00

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2. EXTRA CLAIM FEES FOR UTILITY AND

	Extra Claims			Fee from below	Fee Paid
Total Claims	5	-20** =	0	X 0.00 =	0.00
Independent Claims	5	- 3** =	2	X 0.00 =	0.00
Multiple Dependent				0.00 =	0.00

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) **$0.00**

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FEE CALCULATION (continued)

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1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non - English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR § 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Statement	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

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SUBMITTED BY				Complete *(if applicable)*	
Name	Laurence P. Colton	*Registration No. (Attorney/Agent)*	33,371	*Telephon*	770.522.9762
Signature				*Date*	28 January 2004

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Patent
Express Mail No.: EL394116975US
Express Mail Date: 28 January 2004
User No.: 022870
Docket No.: 20412.001US
Document No.: pta-dan-0124-1

PROVISIONAL APPLICATION FOR LETTERS PATENT
UNITED STATES OF AMERICA

I, W. Neal **DANIELS**, a citizen of the United States of America, residing at 2291 Shiloh Fort Lamar Road, Danielsville, Georgia 30633 US at have invented certain new and useful improvements in a

FAN SHROUD

of which the following is a specification.

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FAN SHROUD

BACKGROUND OF THE INVENTION

1. Technical Field.

The present invention relates generally to the field of fan shrouds and more specifically to fan shrouds for use with building ventilation fans and having means for preventing air flow through the fan when the fan is off.

2. Prior Art.

Buildings often have ventilation systems for the exchange of air between the building and the outside. Some times such ventilation systems are more complex and are connected to the air handling or heating and air conditioning system of the building. Other times such ventilation systems are less complex and are merely for exhausting stale air from the building, for introducing fresh air into the building, or for basic temperature regulation by exhausting hot or cold air from the building as necessary.

Various fan shutters, dampers, and closure panels exist. Examples of two of these are devices sold by Aerotech, Inc. of Mason, Michigan, US and by RollSeal, Inc. of Bremen, Alabama, US. The Aerotech, Inc. system is a series of horizontal louvers that remain closed in their resting position when the fan is off but are pulled open by the airflow when the fan is on. One disadvantage of this type of system is that dust builds up on the louvers, impeding their operation and airflow. The RollSeal, Inc. system is a shutter much like a window shade that rolls down when the fan is off and rolls up when the fan is on. One disadvantage of this type of system is that it has many more mechanical and electrical parts that can fail.

The general use of automatically opening and/or closing louvers, vents, and doors in connection with fans or other forced air systems is well known. Following are several examples of weighted door systems, including the use of the weight of the door alone and/or the use of a counter weight to keep the door open or closed or string/pulley systems.

US Patent No. 6533656 to Hertel discloses a counterweighted cover for an air handling system duct. This is a horizontal closure to fit over an overhead or

surface mounted duct vent. Forced air opens the cover, and when the forced air stops, the counterweight pivots the cover closed. US Patent No. 6203423 to Craw discloses a fairly typical structure for a vertical damper flap. This is a purely gravity driven flap that is opened by forced air and closes by gravity when the forced air flow stops. US Patent No. 6183359 to Klein discloses a fairly typical structure for a horizontal register flap. This is a purely gravity driven flap that is opened by forced air and closes by gravity when the forced air flow stops.

US Patent No. 6061968 to Zimmerman discloses a hinged door assembly comprising a weight to keep the door opened and a string/pulley/motor system to close the door. When it is desired to open the door, the motor unwinds the string and the weight and the weight of the door opens the door. To close the door, the motor is reversed, winding the string. US Patent No. 5921862 to Ucciardi (Ucciardi '862) discloses a horizontally mounted door flap for use on the discharge opening of a fan. The forced air from the fan forces the door open and when the forced air flow stops, the weight of the door cause the door to gravity close. The door has a counterweight to make it easier for the door to remain open.

US Patent No. 5567114 to Wallace discloses a fairly typical structure for a counterweighted door for closing a downwardly oriented fan outlet. This is a purely gravity driven flap that is opened by forced air and closes by the weight of the counterweight when the forced air flow stops. US Patent No. 5195927 to Raisanen discloses an intake vent for a barn. The described advantages of this vent include its ability to be mounted on either side of a wall and a counterweight for keeping the vent closed. US Patent No. 4850265 to Raisanen discloses a cupola mounted air vent for a building having a structure for baffling rain. This device also has counterweights for keeping the vent closed.

US Patent No. 4047328 to Kehl discloses a certain type of greenhouse. Part of the greenhouse structure includes a cooling system comprising a horizontally pivotable vent flap held closed by a string/pulley and counterweight. The vent flap is hinged at its bottom to the greenhouse wall and opens from the top when the air pressure in the greenhouse is greater than outside. The string is attached to the top of the vent and is weighted to keep the vent closed. US Patent No. 3631790 to Olsen discloses an automatically closing louver. The louver has a

horizontally mounted hinge and sits downstream of the air flow. The air flow opens the louver and when the air flow stops, the weight of the louver causes it to close. US Patent No. 3363531 to Kohlmeyer discloses a vent for an animal house comprising a closure flap operated by a string/pulley device. Pulling the string cause the flap to rotate open or closed.

US Patent No. 2823600 to Cole discloses a vent for use in an air conditioning system. The system comprises dampers that open and close depending on whether a fan is on or off. When the fan is on, the pull of the air opens the dampers. US Patent No. 2502736 to Marcoe discloses a horizontally hinged intake vent with a counterweighted damper plate. Air pressure causes the vent to open and when the air pressure equilibrates, the counterweight causes the vent to close. US Patent No. 218596 to Taber discloses possibly the original counterweighted damper patent. This is a horizontally hinged damper that opens inwardly to a duct when the air pressure within the duct is lower than the air pressure outside of the duct, and is for use in a stovepipe. A counterweight closes the vent when the air pressure equilibrates.

Animal houses, such as chicken houses (500' long buildings where chickens are raised) must have such exhaust ventilation. Large fans typically are mounted on one end of the chicken house to pull air out of the chicken house (note that the air generally is pulled out of the house and not blown into the house). When the fans are on, there must be as unimpeded an airflow through the fan as possible to allow for both better ventilation and better fan efficiency. When the fans are off, it is preferable to prevent air from escaping from the chicken house and/or air entering the chicken house through the fan box. This is especially true in the summer and winter to prevent the chicken houses from becoming too hot (summer) or too cold (winter) and to prevent excessive cooling or heating costs for this reason.

Fan shutters can be valuable in lowering heating and cooling costs and in providing for a better environment for the inhabitants of the building. Various articles have been written on the value of fan shutters in general and of clean shutters in particular. *Poultry Housing Tips*, The University of Georgia Cooperative Extension Service, March 1993; *Tests Show Fan Shutter Air Leakage*

Causes Cold Weather Problems, Alabama Cooperative Extension System; *Value Of Clean Shutters Proven In Laboratory Test*, Alabama Cooperative Extension System; and *Reduction Of Poultry Ventilation Fan Output Due To Shutters*, Agricultural Research Service, June 1996.

Notwithstanding the prior art, there is need for a mechanically simple and relatively low cost fan shroud that is not easily fouled. It is this need and others that the present invention is directed.

BRIEF SUMMARY OF THE INVENTION

The present invention is a housing that fits over the fan on the interior of a building. The back of the housing is completely open to fit over the fan and will not impede or impair the operation of the fan. The front of the housing has two freely swinging doors that open and close when the fan is turned on and off, respectively.

The housing structure comprises one or more devices to keep the doors shut when the fan is off. A first device is the shape of the housing itself. The top of the housing extends farther out than the bottom of the housing so that the doors are not quite vertical, but the tops of the doors are biased outward relative to the fan. Thus, gravity makes the doors swing shut. When the fan is on, the vacuum caused by the fan is sufficient to open the doors. A second device is a counter weight attached by a wire to each door. The counter weight biases the doors toward a closed position. When the fan is on, the vacuum caused by the fan is sufficient to counter the effect of the counter weight and open the doors. A third device is a spring built into the hinge of each door to bias the doors toward a closed position. It is preferable in many uses to have a couple of these devices to ensure the doors remain closed when the fan is off.

Although the invention was developed for animal confinement houses such as a chicken house, it is equally suitable for any exhaust fan, including home attic fans.

These features, and other features and advantages of the present invention, will become more apparent to those of ordinary skill in the relevant art when the following detailed description of the preferred embodiments is read in

conjunction with the appended drawings in which like reference numerals represent like components throughout the several views.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front perspective view of the fan shroud with the doors partially opened.

FIG. 2 is a side plan view of the fan shroud with a door closed.

FIG. 3 is a side plan view of an alternate embodiment of the fan shroud with a door open.

FIG. 4 is a side perspective view of the fan shroud with a door opened.

FIG. 5 is a side perspective view of the fan shroud with a door closed.

FIG. 6 is a top plan view of the fan shroud.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now generally to FIGs. 1-4, preferred embodiments of the invention are shown. FIG. 1 is a front perspective view of fan shroud 10 with doors 12 partially opened. This would occur when fan 50 is on and pulling air from building 60. FIG. 2 is a side plan view of fan shroud 10 with a door 12 closed, showing how top wall 14 of fan shroud 10 cabinet extends farther from building 60 wall than bottom wall 16 of fan shroud, resulting in the gravity assist in keeping doors 12 biased toward a closed position. FIG. 3 is a side plan view of an alternate embodiment of fan shroud 10 with a door 12 closed, showing how fan shroud 10 cabinet is angled downward from building 60 wall, resulting in the gravity assist in keeping doors 12 biased toward a closed position. FIG. 4 is a side perspective view of fan shroud 10 with a door 12 opened. This would occur when fan 50 is on and pulling air from building 60. FIG. 5 is a side perspective view of fan shroud 10 with a door 12 closed. This would occur when fan 50 is off. FIG. 6 is a top plan view of fan shroud 10.

The preferred embodiments of the invention generally include fan shrouds 10 that have an opened configuration such as shown in FIG. 1 for exhausting air from building 60 when fan 50 is on and a closed configuration such as shown in FIG. 2 for preventing air from entering or exiting building 60 when fan 50 is off.

Referring to FIG. 1, one preferred embodiment of fan shroud 10 is generally a hollow structure having pentagonal top wall 14, pentagonal bottom wall 16, rectangular or slightly oblique left side wall 18 and right side wall 20, and rectangular or slightly oblique left front door frame wall 22 and right front door frame wall 24. The back of fan shroud 10 is open to fit over fan 50. When mounted on building 60, fan shroud 10 essentially defines an enclosed space that has a volume sufficient to encase at least one fan 50 and to allow doors 12 to swing a suitable distance inward without interfering with the operation of fan 50. The structure of fan shroud 10 can have curved edges and corners so as to prevent persons from becoming injured from contact with the corners of fan shroud 10.

Doors 12 are hingedly attached to central support 26 and preferably can pivot freely towards the interior of fan shroud. Hinges 36 are shown as an illustrative example, but other pivot joints are suitable. When closed, doors 12 can stop against frame walls 22, 24 and be prevented from swinging outside the volume of fan shroud 10 by having the frame aspect of frame walls 22, 24 defining a smaller opening than the size of doors 12. Alternatively, door stops 28 can be used to stop doors 12 from swinging outside the volume of fan shroud 10. Other known or future developed means also can be used to prevent doors 12 from swinging outside the volume of fan shroud 10 and to assure that doors 12 seal suitably against the interior edges of frame walls 22, 24.

Counterweights 30 can be used as an additional means for biasing doors 12 toward a closed position. Counterweights 30 are attached to doors 12 via strings 32. The term strings is being used as the general term for string, twine, cable, rods, rope, and any other suitable means for attaching counterweights 30 to doors 12. In the illustrative embodiment, counterweights 30 are attached to doors 12 via strings 32. Strings 32 are attached to doors 12 at a suitable location, such as the middle of doors 12 close to the edge of doors distal from hinges 36 and central support 26, as shown in FIG. 1. Strings 32 travel through eyeholes 34 and are attached to counterweights 30. Counterweights 30 act upon strings 32, which act upon doors 12, biasing doors 12 toward a closed position.

Eyeholes 34 simply can be holes through frame walls 22, 24 or side walls 18, 20. Alternatively, bracket or eyebolt 38 can be attached to frame wall 22, 24 and extend outwardly from fan shroud 10. String 32 is attached to door 12 and travels directly through eyebolt 38 without passing through frame wall 22, 24. Alternatively, eyeholes 34 or eyebolts 38 can have friction-reducing materials, such as Teflon®, smoothed edges, or pulleys to prevent damage to strings 32 or the snagging or catching of strings 32 when traveling through eyeholes 34 or eyebolts 38. Additional resistance causing devices, such as additional weights or pulleys, can be added as needed to ensure that doors 12 are biased toward the closed position when fan 50 is off.

Referring to FIG. 2, a side plan view of fan shroud 10 is shown with door 12 closed. In this view, it can be seen that top wall 14 extends farther from building 60 wall that does bottom wall 16. This causes the top of doors 12 to lean somewhat downward and forward relative to the interior of fan shroud 10. In other words, doors 12 are slightly off-vertical. Such a configuration causes doors 12 to be biased closed against frame walls 22, 24 due to gravity.

Referring to FIG. 3, a side plan view of an alternate embodiment of fan shroud 10 is shown with door 12 open. In this configuration, the oblique shape of doors 12 can cause doors 12 to lean somewhat downward and forward relative to the interior of fan shroud 10. Such a configuration can also cause doors 12 to be biased closed against frame walls 22, 24 due to gravity.

Referring to FIG. 4, a side perspective view of fan shroud 10 is shown with door 12 opened. In this view, it also can be seen that top wall 14 extends farther from building 60 wall that does bottom wall 16. This causes the top of doors 12 to lean somewhat downward and forward relative to the interior of fan shroud 10. In other words, doors 12 are slightly off-vertical. Such a configuration causes doors 12 to be biased closed against frame walls 22, 24 due to gravity.

Also in this view, it can be seen how large an opening is created by doors 12 when in the open position. This large opening allows for easier air flow through fan shroud 10, lessening the strain on fan 50. Further, by having one or two larger openings, and fewer surfaces, there is less chance of build-up of dust and debris on doors 12. As one disadvantage of current fan shroud devices, especially fan

shrouds with multiple and/or horizontal louvers, is the build-up of dust and debris, which decreases the functionality of the fan shroud, the structure and configuration of the present invention is advantageous. Having no horizontal surfaces eliminates the build-up of dust and debris. Having a large opening through which the exhaust air flows reduces the tendency for dust and debris in the air from contacting and settling on surfaces of fan shroud 10.

Referring to FIG. 5, a side perspective view of fan shroud 10 is shown with door 12 closed. In this position, outside air is prevented from back-flowing into building 60.

Referring to FIG. 6, a top plan view of fan shroud 10 is shown. The profile of fan shroud 10 as shown in this view is advantageous in that it is not a large rectangular device and does not significantly reduce the interior volume of building 60. Further, having the angled front walls 22, 24 reduces the danger of injury to workers walking around the sides of building 60.

Referring generally to FIGs. 2-6, the width of side walls 18, 20 can be designed to fit various fan 50 box sizes, if fan 50 box extends into building 60. Specifically, the width of side walls 18, 20 should be made to correspond to the distance fan 50 extends from building 60 wall. In this manner, fan shroud 10 can fit comfortably and snugly over fan 50, yet still allow sufficient room within the interior of fan shroud 10 for doors 12 to swing fully inward when fan 50 is on.

Referring back to FIG. 1, top wall 14, bottom wall 16, and/or side walls 18, 20 can have means for securing fan shroud 10 to a wall or other surface. For example such means for securing fan shroud 10 to a wall or other surface can include keyholes or screw holes 40, whereby fan shroud 10 can be secured to a wall over fan 50 by means of security screws mounted through one or more of keyholes or screw holes 40. Keyholes or screw holes 40 can be located on a peripheral rim attached to top wall 14, bottom wall 16, and/or side walls 18,20. Alternatively, fan shroud 10 can be mounted to a wall or other surface by means of wall bracket (not shown) in which fan shroud 10 can be removably fitted, by an adhesive, or by other conventional means.

Fan shroud 10 can be mounted in any position that allows for the covering of fan 50. Preferably, fan shroud 10 is mounted vertically, that is, with bottom wall

16 closest to the ground, side walls 18, 20 vertical, and top wall 14 farthest from the ground. Fan shroud 10 also can be mounted horizontally on a horizontal ceiling or at an angle on an angled ceiling as long as doors 12 are in a position to close due to gravity or counterweights 30.

In operation, when fan 10 is off, doors 12 are meant to be in the closed position resting against frame walls 22, 24. The structure of fan shroud 10, either by having top wall 14 extending forward of bottom wall 16 or by having the entire fan shroud 10 structure tilted downwards, cause doors 12 to fall closed against frame walls 22, 24 by gravity. Further, counterweights 30, if used, pull doors 12 closed. When fan 10 is on, the vacuum created within fan shroud 10 pulls doors 12 open. As fan 50 exhausts air from building 60 and as fan shroud 10 is on the upstream side of fan 50, air within building 60 is pulled through fan shroud 10 and through fan 50 when being exhausted to the outside. Thus, the combined weight of doors 12 and counterweights 30, if used, must be less than the weight-equivalent of the vacuum created by fan 50.

Presumably, it is possible that the air pressure within building 60 may be greater than the air pressure outside. With fan 50 off, this differential in air pressure may tend to open doors 12. However, any such air pressure differential likely will be small, and the weight of doors 12 and counterweights 30, if used, likely is, or can be made to be, greater than the weight-equivalent of such an air pressure differential, yet still not be greater than the weight-equivalent of the vacuum created by fan 50.

The present invention can be used in connection with an array of types of fans 50 that can vary in size and shape. It is contemplated that fan shroud 10 can be manufactured in different sizes for use with any type of fan 50 or building 60. Further, fan shroud 10 can be manufactured with one door 12 and one closed front wall 22 or 24. Alternatively, fan shroud 10 can be manufactured with a single front wall 22 or 24 coplanar with fan 50, and comprising one, two, or more doors 12.

Fan shroud 10 can be manufactured relatively simply with inexpensive materials and conventional techniques. Preferably, fan shroud 10 is made from conventional polymer and/or metal materials, is easily manufactured using

standard molding and/or forming techniques, and is fabricated in a relatively inexpensive manner. However, other types of suitable materials, such as woods, ceramics, fiber matrices, glasses or the like, which provide sufficient strength and resistance to ambient or weather elements for the intended application, may be used without departing from the scope of the present invention.

The above detailed description of the preferred embodiments, and the appended figures are for illustrative purposes only and are not intended to limit the scope and spirit of the invention, and its equivalents, as defined by the claims. One skilled in the art will recognize that many variations can be made to the invention disclosed in this specification without departing from the scope and spirit of the invention.

CLAIMS

What is claimed is:

1. A fan shroud comprising:

a. at least one front wall, at least one side wall, a bottom wall and a top wall defining a hollow interior; and

b. at least one door pivotably attached to one of said walls,

wherein said at least one door is mounted onto one of said walls in such a position that said at least one door is biased in a closed position.

2. A fan shroud comprising:

a. at least one front wall, at least one side wall, a bottom wall and a top wall defining a hollow interior; and

b. at least one door pivotably attached to said at least one front wall,

wherein said at least one front wall is slightly off vertical and said at least one door is mounted onto said at least one front wall in such a position that said at least one door is biased in a closed position.

3. A fan shroud comprising:

a. two front walls, two side walls, a bottom wall and a top wall defining a hollow interior; and

b. two doors pivotably attached to each of said two front walls respectively,

wherein said two front walls are slightly off vertical and said two doors are mounted onto said two front walls in such positions that said two doors are biased in a closed position.

4. A fan shroud comprising:

a. two front walls, two side walls, a bottom wall and a top wall defining a hollow interior; and

b. two doors pivotably attached to each of said two front walls respectively,

wherein said two front walls are slightly off vertical and said two doors are side mounted onto said two front walls in such positions that said two doors are biased in a closed position.

5. A fan shroud comprising:

a. two front walls, two side walls, a bottom wall and a top wall defining a hollow interior;

b. two doors pivotably attached to each of said two front walls respectively; and

c. counterweights attached to each of said two doors for biasing said two doors toward a closed position,

wherein said two front walls are slightly off vertical and said two doors are side mounted onto said two front walls in such positions that said two doors are biased in a closed position.

ABSTRACT

A fan shroud having at least one front wall, at least one side wall, a bottom wall and a top wall defining a hollow interior; and at least one door pivotably attached to one of said walls, wherein said at least one door is mounted onto one of said walls in such a position that said at least one door is biased in a closed position.

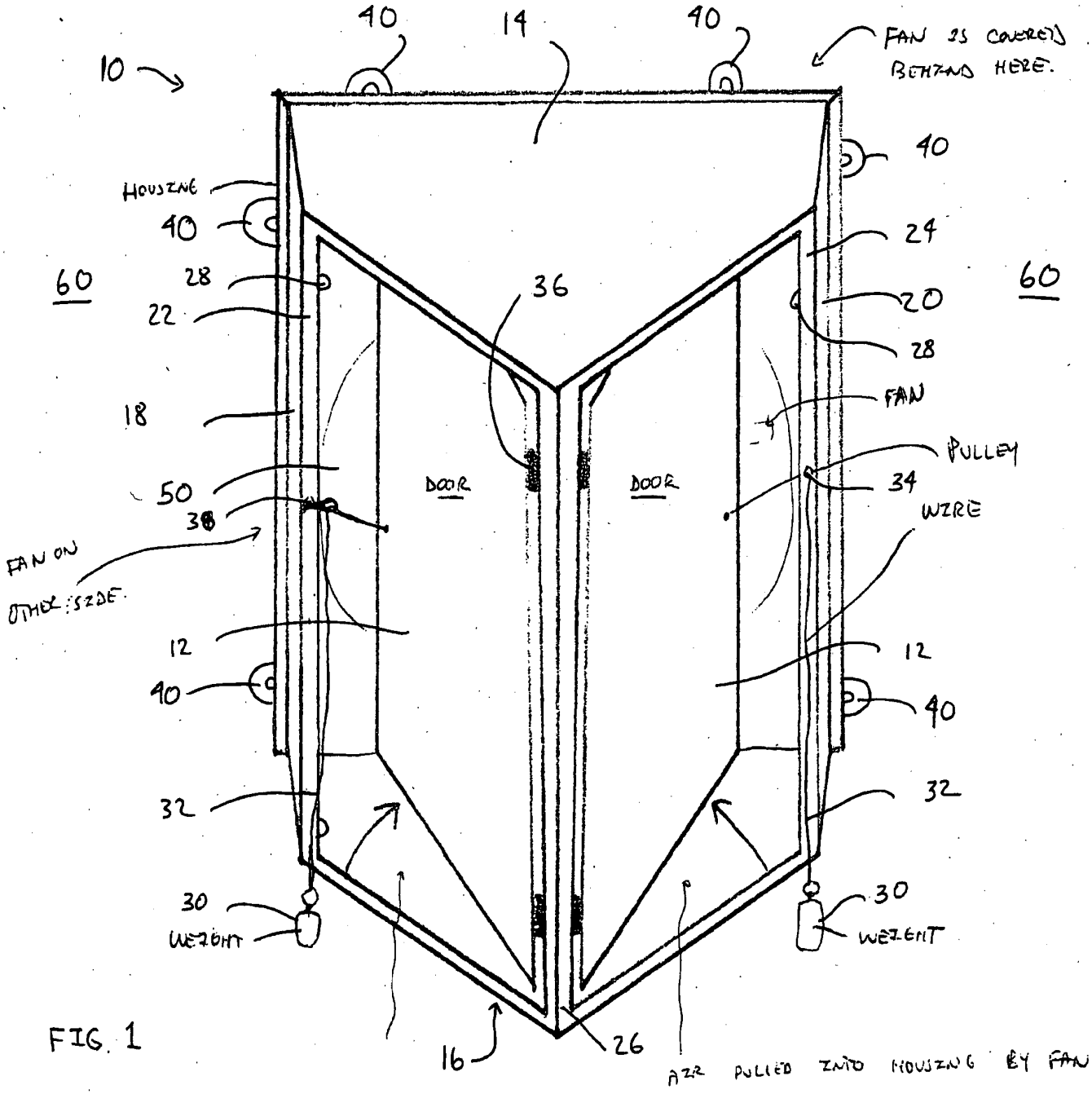


FIG. 1

1/5

TECHNOPEDIA

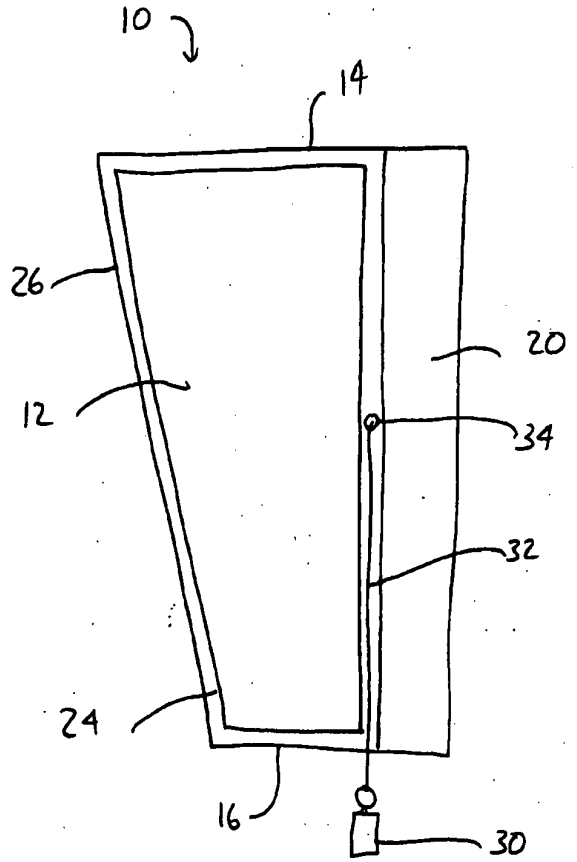


FIG. 2

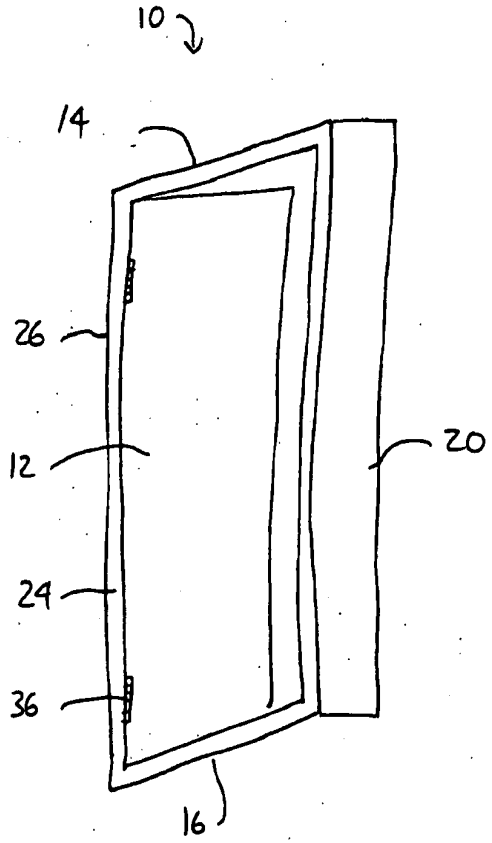


FIG. 3

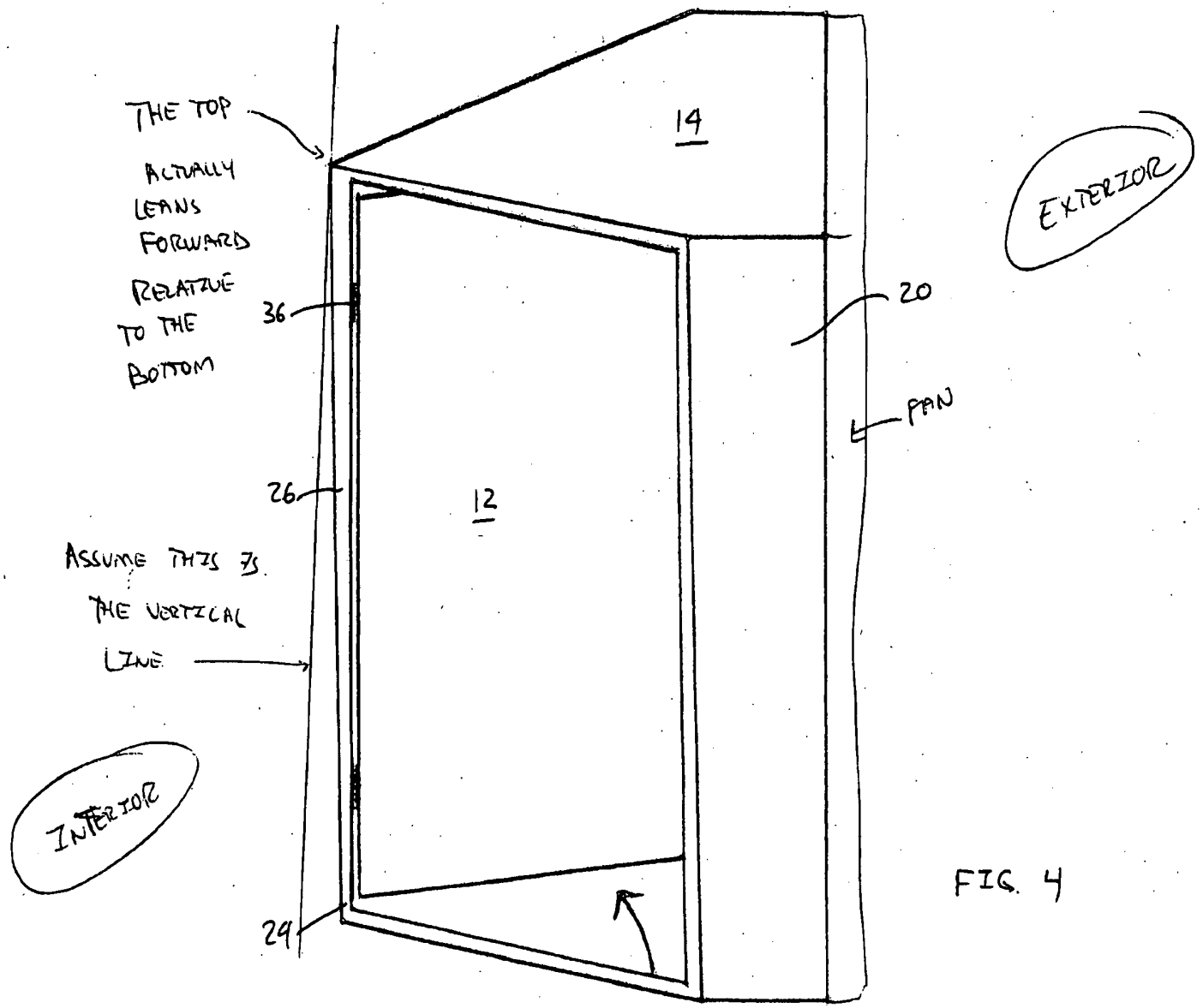
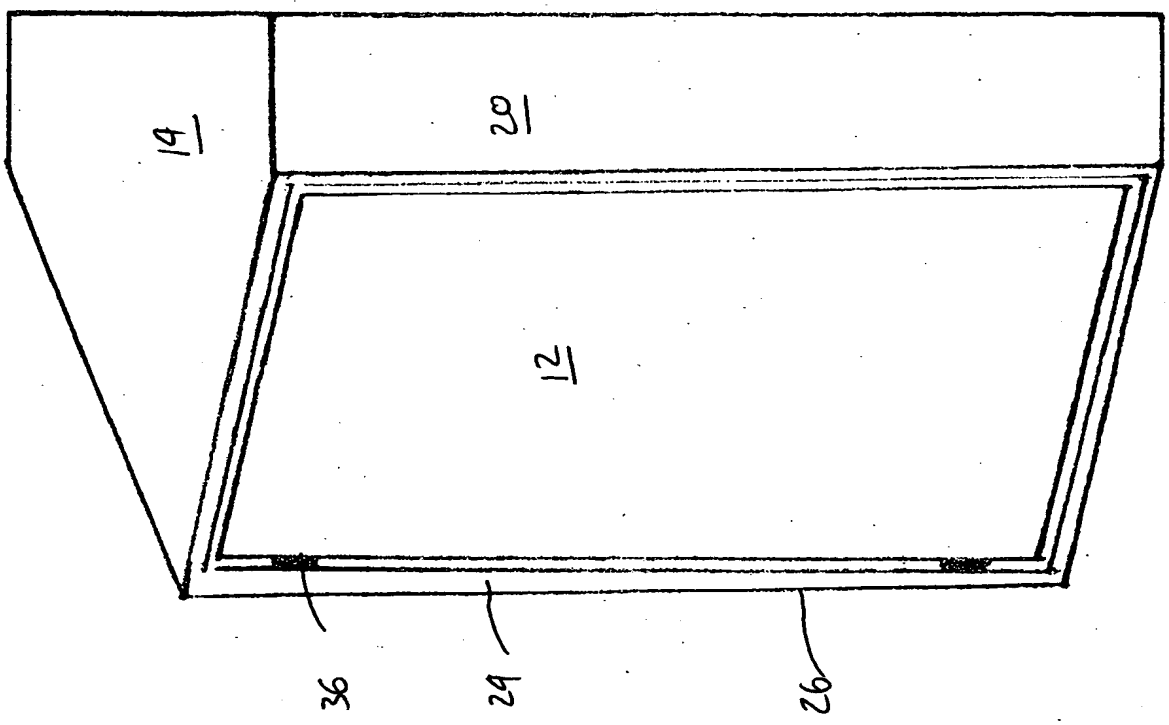

THE TOP
ACTUALLY LEANS FORWARD RELATIVE TO THE BOTTOM
14
EXTERIOR
36
20
PAN
26
12
ASSUME THIS IS THE VERTICAL LINE
INTERIOR
29

FIG. 4

FIG. 5



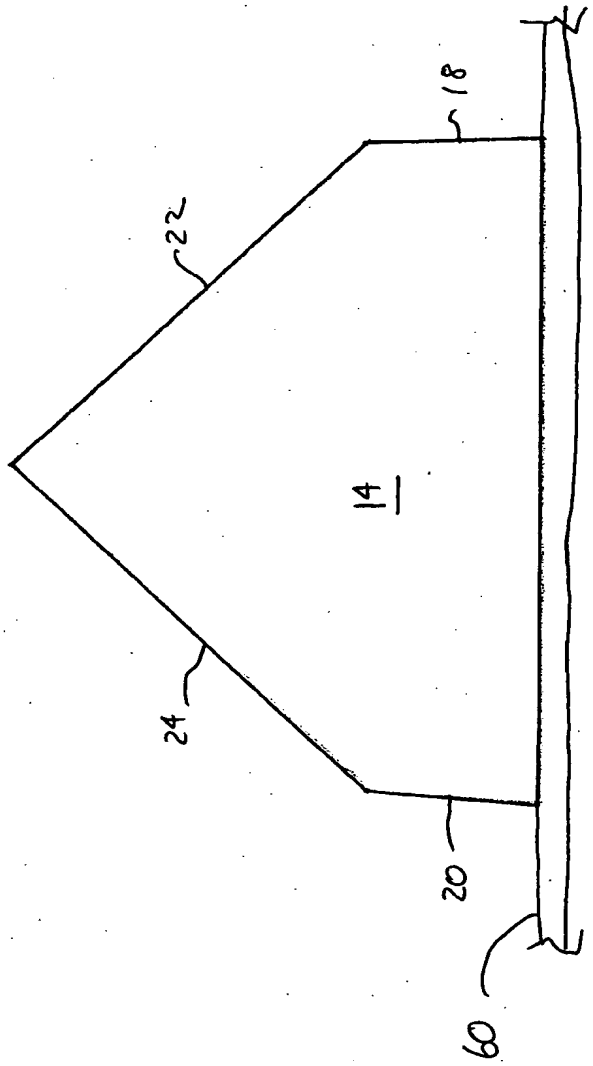


FIG. 6